



LIGHT STEEL CEILING RACK

BACKGROUND AND SUMMARY OF THE INVENTION

5 The present invention relates to a light steel ceiling rack and, more particularly to an improved structure of light steel ceiling rack, which has the connection between the first frame bar and the second frame bar cause a sense of beauty.

10 Figure 1 illustrates the arrangement of a light steel ceiling rack according to the prior art. This design has drawbacks. After connection of the end plug strip 41 to the mounting hole 31 of, the first frame bar 3, a gap may exist between the end edge 421 of the flange 42 of the second frame bar 4 and the side edge 321 of the flange 32 of the first frame bar 3 due to inaccurate
15 positioning or tolerance of size, thereby obstructing the sense of beauty and admitting light. Another drawback is the unstable connection between the end plug strip 41 and the mounting hole 31. Further, the base (body) 30 of the first frame bar 3 is formed of two plate members arranged in a stack, and the base (body) of the second frame bar 4 is also formed of two plate members arranged
20 in stack. Both the first frame bar 3 and the second frame bar 4 have a low toughness, thereby lowering the structural strength.

 Therefore, it is desirable to provide a light steel ceiling rack that eliminates the aforesaid drawbacks.

The present invention has been accomplished under the circumstances in view. It is the main object of the present invention to provide a light steel ceiling rack, which has a high structural strength. It is another object of the present invention to provide a light steel ceiling rack, which eliminates the formation of a gap in between the first frame bar and the second frame bar after their connection, thereby causing a sense of beauty.

According to one aspect of the present invention, the light steel ceiling rack is formed of first frame bars and second frame bars. Each second frame bar has respective second horizontal top flanges terminating in beveled end edges for engaging into respective notches in the first frame bars, and respective first horizontal top flanges provided with end projections for stopping below respective first horizontal top flanges of the first frame bars upon insertion of end plug strips of the second frame bars into respective mounting holes of the first frame bars to enhance the connection and to prevent formation of a gap in the connection area between each first frame bar and each second frame bar.

According to another aspect of the present invention, the two elongated flat base plates of each of the first and second frame bars include a first elongated flat base plate and a second elongated flat base plate. The first elongated flat base plate comprises a plurality of raised portions. The second elongated flat base plate comprises a plurality of recessed portions respectively forced into engagement with the raised portions of the first elongated flat base plate of the respective second frame bar.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is an exploded view of the prior art design.

5 Figure 2 is an exploded view of a part of the preferred embodiment of the present invention.

Figure 3 is an assembly view of Figure 2.

10 Figure 4 is another assembly view of Figure 2 viewed from another angle.

Figure 5 is an elevational view of one second frame bar for the light steel ceiling rack according to the present invention.

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Figure 6 is a top plain view of the assembly shown in Figure 3.

Figure 7 is an elevational view of one first frame bar for the light steel ceiling rack according to the present invention.

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DETAILED DESCRIPTION OF THE INVENTION

Referring to Figures 2~7, a light steel ceiling rack in accordance with the present invention is shown comprised of a plurality of first frame bars **1** and
25 a plurality of second frame bars **2** respectively perpendicularly connected to the first frame bars **1**.

The first frame bars **1** are T-bars, each comprising two elongated flat base plates **11** attached together, a bottom track **10** longitudinally formed integral with the bottom sides of the elongated flat base plates **11**, two first horizontal top flanges **12** respectively outwardly extended from the top sides of the elongated flat base plates **11** in reverses directions, two vertical top flanges **13** respectively upwardly extended from the outer sides of the first horizontal top flanges **12**, two second horizontal top flanges **14** respectively inwardly extended from the top sides of the vertical top flanges **13** and spaced from each other at a distance, a plurality of hanging holes **15** and a plurality of mounting holes **17** cut through the elongated flat base plates **11**, an end stop flange **182** transversely disposed at each of the two distal ends, an end plug strip **181** disposed at each of the two ends, and a springy retaining tong **183** provided at each end plug strip **181**.

The second frame bars **2** are T-bars, each comprising two elongated flat base plates **21** attached together, a bottom track **20** longitudinally formed integral with the bottom sides of the elongated flat base plates **21**, two first horizontal top flanges **22** respectively outwardly extended from the top sides of the elongated flat base plates **21** in reverses directions, two vertical top flanges **23** respectively upwardly extended from the outer sides of the first horizontal top flanges **22**, two second horizontal top flanges **24** respectively inwardly extended from the top sides of the vertical top flanges **23** and spaced from each other at a distance, an end stop flange **282** transversely disposed at each of the two distal ends, an end plug strip **281** disposed at each of the two ends, and a springy retaining tong **283** provided at each end plug strip **281**. The end plug

strips **281** of the second frame bars **2** are to be plugged into the mounting holes **17** of the first frame bars **1**. After insertion of one end plug strip **281** of one second frame bar **2** into one mounting hole **17** of one first frame bar **1**, the respective springy retaining tong **283** of the respective second frame bar **2** prohibits backward movement of the respective end plug strip **281** from the
5 respective mounting hole **17**.

The main features of the present invention are outlined hereinafter. The vertical top flanges **13** of each first frame bar **1** each have a U-notch **131**
10 corresponding to each mounting hole **17** of each first frame bar **1**. The second horizontal top flanges **14** of each first frame bar **1** each have a trapezoidal notch **141** corresponding to each mounting hole **17** of each first frame bar **1** and integral with the corresponding U-notch **131** of the corresponding vertical top flange **13**. The second horizontal top flanges **24** of each second frame bar **2** each
15 have each end terminating in a beveled end edge **241**. The first horizontal top flanges **22** of each second frame bar **2** each have an end projection **221** at each of the two ends corresponding to the beveled end edge **241** at each end of each of the second horizontal top flanges **24**.

20 When inserted one end plug strip **281** of one second frame bar **2** into one mounting hole **17** of one first frame bar **1**, the corresponding beveled end edges **241** of the corresponding second horizontal top flanges **24** of the second frame bar **2** are respectively fastened to the trapezoidal notch **141** of one second horizontal top flange **14** of the first frame bar **1**, and the end projection **221** of
25 the first horizontal top flanges **22** of the second frame bar **2** are respectively

stopped at the bottom side **120** of one first horizontal top flange **12** of the first frame bar **1** (see Figure 4) to enhance the stability of the connection between the first frame bar **1** and the second frame bar **2** and to eliminate the formation of a gap in the connection area between the first frame bar **1** and the second frame
5 bar **2**.

Further, one of the two elongated flat base plates **11** of each first frame bar **1** has a plurality of raised portions **111**, and the other of the two elongated flat base plates **11** of each first frame bar **1** has a plurality of recessed portions
10 **112** corresponding to the raised portions **111**. The two elongated flat base plates **11** of each first frame bar **1** are fastened together by roller ramming to force the respective raised portions **111** into engagement with the respective recessed portions **112**. The engagement between the raised portions **111** and the recessed portions **112** enhances the tightness of the connection and the structural strength
15 of the first frame bar **1**.

Further, one of the two elongated flat base plates **21** of each second frame bar **2** has a plurality of raised portions **211**, and the other of the two elongated flat base plates **21** of each second frame bar **2** has a plurality of
20 recessed portions **212** corresponding to the raised portions **211**. The two elongated flat base plates **21** of each second frame bar **2** are fastened together by roller ramming to force the respective raised portions **211** into engagement with the respective recessed portions **212**. The engagement between the raised portions **211** and the recessed portions **212** enhances the tightness of the
25 connection and the structural strength of the second frame bar **2**.

As indicated above, the invention achieves the following effects:

1. When inserted one end plug strip **281** of one second frame bar **2** into one mounting hole **17** of one first frame bar **1**, the corresponding beveled end edges **241** of the corresponding second horizontal top flanges **24** of the second frame bar **2** are respectively fastened to the trapezoidal notch **141** of one second horizontal top flange **14** of the first frame bar **1**, and the end projection **221** of the first horizontal top flanges **22** of the second frame bar **2** are respectively stopped at the bottom side **120** of one first horizontal top flange **12** of the first frame bar **1** to enhance the stability of the connection between the first frame bar **1** and the second frame bar **2** and to eliminate the formation in the connection area between the first frame bar **1** and the second frame bar **2**.

2. When the two elongated flat base plates **11** or **21** of each first or second frame bar **2** are fastened together by roller ramming, the respective raised portions **111** or **211** are engaged into the respective recessed portions **112** or **212**. The engagement between the raised portions **111** or **211** and the recessed portions **112** or **212** enhances the tightness of the connection and the structural strength of the frame bar **1** or **2**.

Although a particular embodiment of the invention has been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.